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more or less globular, composing what have been termed fibrinous corpuscles. These corpuscles have been considered to be the nuclei of cells; but the author regards them as being merely accidental fragments of broken down tissues, adhering to the filaments, and noways concerned in their development. The more regularly disposed granules, which are observed to occupy the spaces intervening between the filaments composing the ordinary cellular tissue, he considers as being fatty matter deposited within these spaces. He, in like manner, regards the observations tending to show the cellular origin of the fibrous, cartilaginous, and osseous tissues, as altogether fallacious; and maintains that the cells, which these animal textures exhibit when viewed under the microscope, are simply spaces occurring in the more solid substance of these structures, like the cavities which exist in bread. These views are pursued by the author in discussing the formation of the skin, the blood-vessels, and the nerves, and in controverting the theory of secretion, founded on the action of the interior surfaces of the membranes constituting cells.

2. "Contributions to Terrestrial Magnetism."—No. V. By Lieut.-Colonel Edward Sabine, R.A., F.R.S.

In this paper the author details and discusses the magnetic observations made on board Her Majesty's ships *Erebus* and *Terror*, between October 1840 and April 1841, being the first summer which the expedition under the command of Captain James Clark Ross, R.N., passed within the Antarctic Circle.

The elimination of the influence of the ship's iron in the calculation of the results of these observations occupies a considerable portion of the paper. Formulæ for this purpose are derived from M. Poisson's fundamental equations, and the constants in the formulæ are computed for each of the two ships, from observations made on board expressly with that object. With these constants, tables of double entry are formed for each of the three magnetic elements, namely, declination, inclination, and intensity, giving the required corrections of each, for all the localities of the voyage.

These and other corrections being applied, the results are tabulated and charts formed from them. The full consideration of the charts is postponed until the whole of the materials collected by the Antarctic Expedition shall be before the Royal Society. Meanwhile the paper concludes with the following general remarks, viz.

1. The observations of declination, particularly those which point out the course of the lines of 0 and of 10° east, indicate a more westerly position than the one assigned by M. Gauss in the 'Atlas des Erdmagnetismus,' for the spot in which all the lines of declination unite. The progression of the lines in the southern hemisphere generally, from secular change, is from east to west; the difference consequently is in the direction in which a change should be found in comparing earlier with more recent determinations.

2. The general form of the curves of higher inclination in the southern hemisphere is much more analogous to that in the northern than appears in M. Gauss's maps. For example, the isoclinical line

of -85° , instead of being nearly circular, as represented in the 3^{te} Abtheilung of Plate XVI. of the 'Atlas des Erdmagnetismus,' is an elongated ellipse, much more nearly resembling in form and dimensions the ellipse of 85° of inclination in the northern hemisphere in the same work, Plate XVI. 2^{te} Abtheilung. The analogy between the two hemispheres in the characteristic feature of the elliptical form of the higher isoclinical lines is the more important to notice, on account of the particular relation which appears to subsist in the northern hemisphere between the change in the geographical direction of the greater axis of the ellipse, and the secular changes of the inclination generally throughout the hemisphere. The present direction of the greater axis in the northern hemisphere, is nearly N.N.W. and S.S.E., or that of a great circle passing through the two foci of maximum intensity. In the southern hemisphere, the present direction of the greater axis differs little from E.S.E. and W.N.W.

3. Captain Ross's observations of the intensity do not appear to indicate the existence anywhere in the southern hemisphere of a higher intensity than would be expressed by 2.1 of the arbitrary scale. In this respect also the analogy between the two hemispheres appears to be closer than is shown in M. Gauss's maps, Plate XVIII. With respect to the direction of as much of the line of highest intensity (2.0) as it has been possible to draw with any degree of confidence from the observations now communicated, it will be found to be in almost exact parallelism with the isodynamic line of 1.7 in Plate III. of the author's report "On the Variations of the Magnetic Intensity," in the Report of the eighth meeting of the British Association, for 1838; which line was the highest of which the position could be assigned at that period for any considerable distance by the aid of the then existing determinations.

3. "An Account of several new Instruments and Processes for determining the Constants of a Voltaic Circuit," by Charles Wheatstone, V.P.R.S., Professor of Experimental Philosophy in King's College, London, Corresponding Member of the Royal Academy of Sciences at Paris, &c.

The author proposes in the present communication to give an account of various instruments and processes which he has employed during several years past for the purpose of investigating the laws of electric currents. He states that the practical object for which these instruments were originally constructed, was to ascertain the most advantageous conditions for the production of electric effects through circuits of great extent, in order to determine the practicability of communicating signals by means of electric currents to more considerable distances than had hitherto been attempted. Their use, however, is not limited to this special object, but extends equally to all inquiries relating to the laws of electric currents and to every practical application of this wonderful agent.

As the instruments and processes described by the author are all founded on Ohm's theory of the voltaic circuit, he commences with